

Before the Federal Communications Commission Washington, DC

In The Matter of)
Inquiry Regarding Carrier Current Systems,)
including Broadband over Power Line Systems) ET Docket No. 03-104
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Comments of Joseph W. Jurecka (N5PYK)

Introduction

Interference on various amateur bands is a reality for the majority of amateur operators. Amateurs operate under weak signal conditions on a regular basis. Whether the source is power lines or electrical appliances, the result of interference is the same. That result is a decreased capability to establish and maintain communications. When the noise floor rises above natural limits, the only method to maintain the same quality of link is to increase power. Increasing power to overcome an artificially elevated noise floor is not a win-win for the amateur community, the power industry, or society in general.

I agree with the ARRL assessment that broadband distribution over unshielded power lines will only further exacerbate the issues that all RF users face today. By simple physics, communications requiring broader bandwidth require more power per Hz. Broadband data distribution over power lines (BPL), which shares the spectrum with amateur, aviation, marine, international broadcast, as well as a multitude of other uses, will raise the noise floor artificially.

Service Disruption

Issues on the 2.4 GHz band come to mind which mirror the potential of BPL initiatives. Yet this is another issue which amateurs must deal with, even if only around meal time. When any homeowner operates their microwave oven on my street, I lose all capability to communicate via the amateur satellite service. I believe a similar result on HF would result with BPL, but on a continuous basis. As HF is one of the most appropriate means for medium to long distance communications, it is vital that the spectrum not suffer additional pollution.

As alluded to previously, BPL has the potential to disrupt not only amateur, but a wide variety of applications. International broadcast reception will be largely incapable of being received. Low-band VHF public safety communication is at risk. Television signals on channels 2-6 may be degraded. Based on experience with power line noise to date, with so many non-linear junctions that start to radiate (transformers, switches, fouled connections), the higher frequencies will be affected, as well, with harmonics (FM broadcast, aviation, satellite, public service, and additional amateur bands.)

Economic challenges

Most certainly some proponents may argue for tight regulation of broadband signals. While the emitted signals are unacceptable under part 15, the economic aspect must be evaluated. The national power grid is a massive and complex distribution system. It is well known that there are a large number of point and distributed noise sources just from 60Hz distribution. As there are nearly constant interference reports which are caused by power distribution systems today, these same lines being used to carry broadband data will cause an even greater issue. The power industry should evaluate the costs of keeping the distribution system in top RF condition. I believe that other alternative methods of broadband distribution may prove more economically feasible.

Alternatives

As the power industry appears eager to get into the broadband space, they should consider other alternatives. The use of microwave bands above 24 GHz is fairly limited today. However, those bands could be used in a distributed fashion to deliver service to a neighborhood in a fashion similar to MMDS, etc. The neighborhood sites would be linked via non-radiating cable back to a distribution center. Those bands are allocated and available. The poles are in place...that can be reused, but transport mechanism must not radiate broadly. If they truly believe that the market is there, the business case will validate. If they are not interested in this method, it therefore becomes apparent that the power companies are looking for something for nothing by forcing broadband over an unshielded power line. There is no justifiable reason to degrade so many users of RF spectrum to throw together a solution just because it happens to be inexpensive.

Conclusion

While my personal interest lie in 50 MHz and up weak signal communication, the importance of a low noise floor on all bands is extremely important. Based on my knowledge of the capabilities of BPL and how it operates, I cannot condone the solution. Therefore, I oppose sending broadband data over power lines with the technical solutions proposed.

Respectfully submitted,

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